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WILLIAM D. HALL 10850 STANMORE DR POTOMAC, MD 20854				
EXAMINER				
RIPA, BRYAND				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/542,533

**Applicant(s)**

MITANI, YOSHIYUKI

**Examiner**

BRYAN D. RIPA

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-28 is/are rejected.
- 7) ☒ Claim(s) 17.21 and 26-28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/8)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

2. The drawings are objected to because figures 1 and 2 each contain foreign language text. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

3. Claims 17, 21 and 26-28 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim must only refer to the other claims in the alternative. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

4. Applicant is advised that should claims 15 and 16 be found allowable, claims 19 and 20 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 9-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled

in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “gr” in claims 9-28 is apparently used by the claim as an abbreviation to mean “gram”, while the accepted meaning is “grain” – an alternative measure of weight. Consequently, the term is indefinite because the specification does not clearly redefine the term.

It is suggested that the claim be amended to either use a commonly used abbreviation such as “g” or, alternatively, write out the word “gram” so as to clearly denote the unit of mass intended.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minoru (J.P. 2-97698 A) with reference to the English abstract and page 596 of the Japanese patent (hereinafter referred to as "MINORU") and further in view of Ogden (U.S. Pat. No. 4,822,458) (hereinafter referred to as "OGDEN").

Regarding claim 9, MINORU teaches a method of forming a layer on a surface being characterized by performing an anodic oxidation treatment on aluminum or an aluminum alloy by using a bath liquid which involves an aqueous solution containing 200-250 g/L of sulfuric acid and 10-20 g/L of nickel sulfate having a bath temperature between 0-5 °C with a current density between 4-8 A/dm<sup>2</sup> (see abstract).

MINORU does not explicitly teach the voltage being a DC voltage between 100 and 200 V. Instead, MINORU teaches the use of a lower voltage process to give an anodized coating have a thickness of between 30 and 50 µm (see Applicant's specification ¶¶3-¶8).

However, OGDEN teaches that is known in the art to use higher voltages, i.e. up to 130 volts, when performing hard anodizing (see col. 2 lines 53-59 teaching the use of anodizing voltages up to 130 V). Furthermore, one of ordinary skill in the art would have appreciated the potential use of higher voltages to produce thicker oxide coatings having increased hardness.

As a result, one of ordinary skill in the art would have appreciated that the use of higher voltages resulting in a larger current density during the anodizing process would allow for the formation of a larger oxide layer having increased hardness.

Consequently, it would have been obvious to one of ordinary skill in the art at the time of invention in an effort to produce a harder oxide coating to increase the voltage up to 130 volts as taught by OGDEN in the method of MINORU as claimed.

Regarding claim 10, MINORU teaches the method of forming a layer on a surface of aluminum or aluminum alloy wherein the bath liquid further comprises a low polymerization acrylic resin (see abstract).

MINORU does not teach the resin having a composition in the range of between 280 to 320 g/L.

However, MINORU as modified by OGDEN would result in a thicker oxide coating as noted previously. Consequently, more resin would be needed to fill the larger pores of oxide layer. As a result, one of ordinary skill in the art applying the teachings of OGDEN to the method of MINORU would have readily appreciated the need to increase the concentration of the resin composition in order to fill the larger pores of the thicker oxide layer.

Furthermore, it would have been obvious to one of ordinary skill in the art to optimize the concentration of resin used in order to provide for sufficient resin to allow for complete filling of the pores within a sufficient amount of time.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention in applying the increased voltage of OGDEN to the method of MINORU to additionally increase the composition of the resin composition in the bath.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomita (U.S. Pat. No. 4,225,399) (hereinafter referred to as "TOMITA") in view of Mita (U.S. Pat. No. 3,870,608) (hereinafter referred to as "MITA")

Regarding claim 9, TOMITA teaches a method of forming a layer on a surface being characterized by performing an anodic oxidation treatment on aluminum or an aluminum alloy by using a bath liquid which involves an aqueous solution containing approximately 250 g/L of sulfuric acid (see col. 2 line 1 teaching the use of a 20% sulfuric acid bath, i.e. approximately 230 g/L) having a bath temperature between 1-3 °C (see col. 2 line 1) with a current density between 2-5 A/dm<sup>2</sup> (see col. 2 line 3) and a voltage between 100 to 200 V (see col. 2 line 4).

TOMITA does not teach the bath liquid further comprising 15 to 25 g/L of nickel sulfate.

However, MITA teaches that it was known in the art to add a metal sulfate to a sulfuric acid anodizing bath in order to allow for a one-step process for coloring the formed oxide layer (see col. 2 lines 30-36 teaching the addition of a metal salt preferably including, among other types of sulfates, nickel sulfate). Furthermore, MITA discloses the concentration of the added metal salt having a concentration as claimed (see col. 2 lines 37-45 teaching the concentration of the metal salt being between 1 and 100 g/L depending on the desired color and economics of the particular process).

As a result, one of ordinary skill in the art would have readily appreciated that a metal salt such as nickel sulfate could be added to the sulfuric anodizing bath of TOMITA to provide a coloring effect to the formed oxide layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to incorporate a metal salt, such as nickel sulfate, having the concentration as claimed as taught by MITA to the anodizing bath of TOMITA.

8. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over MINORU in view of OGDEN as applied to claims 9 and 10 above, and further in view of Dattilo et al., (U.S. Pub. No. 2002/0157961) (hereinafter referred to as "DATTILO").

Regarding claims 11 and 12, MINORU does not teach the method of forming a layer on a surface of aluminum or aluminum alloy wherein the bath liquid further contains tartaric acid within a concentration of between 5 and 15 g/L.

However, DATTILO teaches an anodizing electrolyte wherein the electrolyte comprises sulfuric acid with added tartaric acid having a concentration of between 5 to 200 g/L (see ¶6).

Moreover, DATTILO teaches that the use of an anodizing electrolyte containing sulfuric acid and tartaric acid results in reducing the amount of industrial waste and in reducing the processing time (see ¶7 and ¶8 teaching the benefits of the anodizing bath employing a mixture of sulfuric and tartaric acid).

Consequently, it would have been obvious to one of ordinary skill in the art at the time of invention to add tartaric acid as taught by DATTILO to the sulfuric acid anodizing electrolyte of MINORU.

9. Claim 13, 14, 18, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over MINORU in view of OGDEN as applied to claim 9 above and MINORU in view of OGDEN and DATTILO as applied to claims 11 and 12 above, and further in view of "Color Hard Anodizing of Aluminum Alloys: Scientific and Practical Aspects" by V.S. Sinyavskii in *Protection of Metals*, 36(2) pages 124-127 (2000) (hereinafter referred to as "SINYAVSKII") with evidence from TOMITA and Ng et al., (U.S. Pub. No. 2008/0274375) (hereinafter referred to as "NG").

Regarding claims 13, 22 and 23, MINORU in view of OGDEN and DATTILO teaches the method of forming a layer on a surface of aluminum or aluminum alloy wherein the anodic oxidation treatment is performed with a voltage of between 130 to 170 V (see OGDEN at col. 2 lines 53-59 teaching the use of anodizing voltages up to 130 V) and a current density of between 8 and 12 A/dm<sup>2</sup> (see MINORU's abstract).

MINORU in view of OGDEN and DATTILO fails to teach the bath liquid having a temperature of between -10 to -5 °C. Instead, MINORU discloses the use of a temperature of between 0 to 5 °C (see abstract).

However, SINYASKII teaches that it was known in the art to use a lower bath temperature, i.e. between -4 to -8 °C, in hard anodizing processes (see page 124).

Moreover, as evidenced by TOMITA, the relationship between temperature and oxide layer hardness was known to one of ordinary skill (see col. 2 lines 39-53 teaching the formation of a soft oxide layer when the bath temperature is maintained around 30 °C and the formation of a hard film when the bath temperature is maintained around 5 °C). As a result, one of ordinary skill in the art would have readily appreciated that further dropping the electrolyte temperature would provide for an even harder oxide layer as taught by TOMITA (see col. 2 lines 62-68 teaching the formation of an even denser, i.e. harder, film).

Consequently, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the temperature disclosed by SINYASKII to obtain an even harder oxide layer as evidenced by TOMITA in the modified method of MINORU.

Regarding claims 14 and 18, MINORU in view of OGDEN, DATTILO, and SINYASKII teaches the method of forming a layer on a surface of an aluminum alloy wherein the aluminum alloy is duralumin (see MINORU at page 596 teaching the aluminum alloy being used being A6061-T6 which as evidenced by NG is an aluminum alloy containing copper).

Please note, duralumin is being interpreted as applying to any aluminum-copper alloys (see NG at ¶72 teaching duralumin used as meaning an aluminum copper alloy).

10. Claims 15, 19, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over MINORU in view of OGDEN as applied to claims 9 and 10 above and

MINORU in view of OGDEN and DATTILO as applied to claim 11, and further in view of Hesse et al., (U.S. Pub. No. 2003/0098240) (hereinafter referred to as "HESSE") with evidence from NG.

Regarding claims 15, 19, 24 and 25, MINORU in view of OGDEN teaches the method of forming a layer on a surface comprising performing the anodic oxidation treatment on a surface of the aluminum alloy containing Mn (see MINORU at page 596 teaching the aluminum alloy being anodized being A6061-T6 which, as evidenced by NG at table 1, is an alloy that contains Mn) under the conditions of a voltage between 130 to 170 V (see OGDEN at col. 2 lines 53-59 teaching the use of voltages up to 130 V) and with a current density of between 8 and 12 A/dm<sup>2</sup> (see MINORU abstract teaching the use of a current density of 8 A/dm<sup>2</sup>). MINORU in view of OGDEN fails to teach the bath liquid temperature being between 15 and 18 °C.

However, HESSE teaches the use of a sulfuric acid anodizing electrolyte having a temperature of between 18-22 °C (see ¶6). Furthermore, although the use of a higher bath liquid temperature would result in reduced hardness of the oxide layer it would also result in considerable energy savings since the electrolyte does not have to be cooled to the same degree during the process.

Moreover, it would have been within the capability of one having ordinary skill in the art to optimize the bath temperature in order to give an oxide layer having the desired physical properties at the most economical operating costs.

Consequently, it would have been obvious to one of ordinary skill in the art at the time of invention to operate the process at the bath temperature of HESSE in order to provide a cheaper means of manufacturing the anodized article according to the method of MINORU.

11. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over MINORU in view of OGDEN as applied to claim 9 above, and further in view of Mitani (U.S. Pat. No. 5,132,003) (hereinafter referred to as "MITANI").

Regarding claims 16 and 20, MINORU as modified by OGDEN fails to teach the method of forming a layer on a surface of aluminum or an aluminum alloy wherein the anodic layer is subsequently impregnated with silver by an electrolytic process having the conditions as claimed.

However, MITANI teaches that electrolytic impregnation of silver into the pores of an anodized aluminum substrate was known in the art (see col. 2 lines 6-11 and col. 3 lines 21-37 teaching the use of, among other salts, silver salt for the subsequent electrolytic treatment of the anodized material). Furthermore, MITANI teaches the silver bath containing silver sulfate, boric acid and nickel sulfate with the bath temperature between 5 and 20 C and an AC voltage of between 10 and 30 V (see col. 2 lines 46-61).

Moreover, MITANI teaches the benefit of employing a subsequent silver impregnation step being that the step allows for the formation of a strong dense coating that increases the weatherability, corrosion resistance and wear resistance of the oxide

coating as well as providing for a coloring effect of the oxide layer (see col. 2 lines 6-16).

Additionally, it is noted that MITANI does not explicitly disclose the current density or treatment time of the electrolytic treatment. However, one of ordinary skill would have been readily able to determine suitable parameters, like those claimed, through routine experimentation. Furthermore, it is also noted that the concentration of some of the constituents of the treating bath of MITANI are slightly different than the claimed values (see for example MITANI at col. 2 lines 52 and 58 teaching the concentration of boric acid being between 25-30 g/L and the concentration of nickel sulfate being between 15 and 25 g/L). However, as discussed by MITANI (see col. 4 lines 9-15), it would have been obvious to one of ordinary skill that slight modifications in the electrolytic conditions or concentration of the components could be changed depending on the desired characteristics of the resulting film.

Consequently, one of ordinary skill would have readily appreciated that the concentrations of the various components could be changed as well as the treatment conditions.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ a subsequent electrolytic silver impregnation treatment as taught by MITANI as claimed in the anodizing method of MINORU as modified by OGDEN.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN D. RIPA whose telephone number is 571-270-7875. The examiner can normally be reached on Monday to Friday, 9:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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